

REMARKS

Claims 1-20 are all the claims pending in the application. Claims 1-20 have been amended for purposes of clarity and form only.

Entry of the above amendments is respectfully requested.

Initially, the Examiner is respectfully requested to indicate that the drawings have been accepted.

I. Response to Rejection of Claims under 35 U.S.C. § 112, second paragraph

Claims 1, 12, 14, 15, 17 and 18 are rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite.

A. The Examiner asserts that there is insufficient antecedent basis for "said surface" in claims 15 and 17.

Claims 15 and 17 depend from claim 1, which recites "said metal surface" in line 4. Therefore, it is respectfully submitted that there is sufficient antecedent basis for "said surface" in claims 15 and 17.

B. The Examiner asserts that claim 18 is indefinite because it does not recite any positive steps.

Claim 18 has been amended to recite the step of "subjecting the metal surface to the carboxylation treatment."

C. The Examiner asserts that, in claim 1, line 4, "by bring bringing" should be changed to "by bringing"; in claim 12, line 3 and claim 17, line 4, "1.10-3" should be changed to "1x10-3"; and in claim 14, "oxidising" should be changed to "oxidizing".

The claims have been amended as suggested by the Examiner.

In view of the above, it is respectfully submitted that the rejections have been overcome, and thus, withdrawal of the rejections is respectfully requested.

II. Response to Rejection of Claim 18 under 35 U.S.C. § 101

Claim 18 is rejected under 35 U.S.C. §101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. §101.

Applicants respectfully traverse the rejection. Claim 18 recites a method "comprising subjecting the metal surface to the carboxylation treatment as claimed in Claim 1," and thus, recites a step involved in the process. Therefore, it is submitted that the present invention according to claim 18 is a proper process claim, and withdrawal of the rejection is respectfully requested.

III. Response to Rejection of Claims 1-2, 5, 8, 14 and 19 under 35 U.S.C. § 102(b)

Claims 1-2, 5, 8, 14 and 19 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Derule et al. (US 5,683,751).

Applicants respectfully traverse the rejection and submit that Derule does not anticipate the present invention.

The present invention according to claim 1 is a method of treatment by carboxylation of a metal surface by bringing the said metal surface into contact with an organic or hydro-organic aqueous bath comprising at least one organic acid in free form or in the form of salt, where (1) the said organic acid is a saturated or unsaturated aliphatic monocarboxylic or dicarboxylic acid, (2) the said organic acid is in solution and/or in emulsion in the bath at a concentration greater than 0.1 mole/litre, and (3) the pH of the bath is acidic. According to the process of the

present invention, a carboxylate conversion layer is formed. If the carboxylic acid concentration is less than 0.1 mol/L, the speed of formation of the metallic carboxylate-based conversion layer is not high enough for obtaining an efficient conversion layer within a period, the duration of which would be an industrial requirement.

Derule discloses an aqueous solution for protecting steel containing an alkaline aliphatic monocarboxylic acid, such as a heptanoic acid, having a pH value below 7. However, Derule does not disclose a treatment that is performed under oxidizing conditions for a metallic surface to be treated. Thus, unlike the process of the present invention, the treatment of Derule does not lead to the formation of a carboxylate conversion layer because the metal of the surface is not dissolved and cannot react with the carboxylic acid.

In addition, Derule does not disclose the claimed amount of alkaline aliphatic monocarboxylic acid used in the solution. As pointed out by the Examiner, Example 2 contains sodium heptanoate in an amount of 0.04 mole/L. In addition, in Example 3, the amount of sodium heptanoate is 0.08 mole/L. However, claim 1 recites that the concentration of the organic acid is "greater than 0.1 mole/L."

Therefore, it is respectfully submitted that Derule does not disclose the present invention according to claims 1 or the claims depending therefrom. Accordingly, withdrawal of the rejection is respectfully requested.

IV. Response to Rejection of Claims 1-7, 10-11, 14, 16 and 19-20 under 35 U.S.C. § 103(a)

Claims 1-7, 10-11, 14, 16 and 19-20 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Carson et al. (US 4,720,405) in view of Derule.

Applicants respectfully traverse the rejection and submit that the cited references do not

render the present invention obvious.

Carson discloses, at col. 3, lines 16-21, that:

Polyester polyols can be prepared by the polyesterification of an organic polycarboxylic acid or anhydride thereof with organic polyols and/or an epoxide. Usually, the polycarboxylic acids and polyols are aliphatic or aromatic dibasic acids and diols.

The Examiner relies on the disclosure at, for example, col. 3, lines 35-43 of Carson as teaching a coating solution comprising carboxylic acids, which states:

The acid component of the polyester consists primarily of monomeric carboxylic acids or anhydrides having 2 to 18 carbon atoms per molecule. Among the acids which are useful are phthalic acid, isophthalic acid, terephthalic acid, tetrahydrophthalic acid, hexahydrophthalic acid, adipic acid, azelaic acid, sebacic acid, maleic acid, glutaric acid, chlorendic acid, tetrachlorophthalic acid, decanoic acid, dodecanoic acid, and other dicarboxylic acids of varying types.

Thus, the above disclosure relied upon by the Examiner is directed to the acid component of the polyester, i.e., the acid portion of the polyester. Accordingly, the disclosure relied upon by the Examiner is not directed to a carboxylic acid present in the coating, but is directed to carboxylic acid used to prepare the polyester polyol, which is used in the coating solution. Therefore, contrary to the Examiner's assertion, Carson does not disclose an "aqueous bath comprising an organic acid in free form or in the form of a salt" as recited in Claim 1.

In addition, the Examiner asserts that the amount of carboxylic acid is inherently taught by Carson, and that it would have been obvious to one of ordinary skill in the art to use the claimed amount of carboxylic acid. However, since Carson fails to disclose an aqueous solution comprising a carboxylic acid, Carson does not inherently teach that the amount of carboxylic acid is more than 0.1 mole/L.

Further, the Examiner asserts Carson does not teach the claimed acidic pH of the coating composition. To make up for the deficiencies of Carson, Derule is cited as teaching a

process for treating galvanized steel surfaces with a coating solution comprising aliphatic monocarboxylic acid, the solution having a pH of below 7. Therefore, the Examiner takes the position that it would have been obvious to one of ordinary skill in the art to have incorporated the acidic coating solution pH as taught by Derule into the coating composition of Carson. However, for the reasons discussed above, Carson does not disclose a coating composition comprising a carboxylic acid, and thus, there is no teaching or suggestion that would lead one of ordinary skill in the art to adjust the coating composition of Carson to have an acidic pH.

In view of the above, Carson and Derule do not teach or suggest the present invention. Accordingly, withdrawal of the rejection is respectfully requested.

V. Response to Rejection of Claims 8-9, 12-13, 15 and 17 under 35 U.S.C. § 103(a)

Claims 8-9 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Carson and Derule, in view of Toman (US 4,877,838).

Claims 12-13 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Carson and Derule, in view of Hughes et al. (US 6,206,982 B1).

Claim 15 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Carson and Derule, in view of Emmonds et al. (US 6,676,820 B2).

Claim 17 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Carson and Derule, and in view of Melotik (US 3,969,152).

Applicants respectfully traverse the rejections and submit that the cited references do not teach or suggest the present invention for the reasons discussed above. That is, since claims 8-9, 12-13, 15 and 17 depend, directly or indirectly, from claim 1, it is respectfully submitted that these claims are patentable for at least the same reasons as claim 1.

Accordingly, withdrawal of the rejection is respectfully requested.

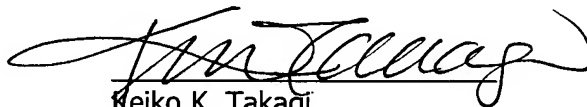
VI. Conclusion

In view of the foregoing, reconsideration and allowance of claims 1-20 is respectfully requested.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Keiko K. Takagi
Registration No. 47,121

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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CUSTOMER NUMBER

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